CONTENTS

Number 1

	1	**Cooperating Organizations**
	2	**Letters from our Readers**
Joseph C. Kellogg	3	**Editorial: Contracts and the U.S. Construction Industry — What's Gone Wrong**
	5	**Interview with Colin Kirkland**
Arne Lislerud	9	**Hard Rock Tunnel Boring: Prognosis and Costs**
Nils I. Johansen, Scott L. Huang and Nolan B. Aughenbaugh	19	**Alaska's CRREL Permafrost Tunnel**
USNC/TT and USNC/RM	25	**Advances in Technology for the Construction of Deep-Underground Facilities**
Gunnar Nord and Hakan Stille	45	**Bore-and-Blast Techniques in Different Types of Rock: Sweden's Experience**
Japan Tunnelling Association	51	**Single-Shell *In-Situ* Concrete Tunnel Lining: Experience in Japan**
Alfred Haack	55	**Single-Shell *In-Situ* Concrete Tunnel Lining: Experience in the Federal Republic of Germany**
P. Morkel and A. J. Hammond	67	**Contract Documentation for Underground Works to Provide Flexibility in Design and Construction**
Wang Zuoyuan and L. H. Tung	71	**Control of Water Damage in Cave Dwellings Built in Loess**
	75	**News and Comment**
	82	**Meetings**
	85	**Publications**
	87	**ITA Pages**
	96	**News from Cooperating Organizations**

Number 2

	99	**Cooperating Organizations**
Einar Broch and Charles Fairhurst	100	**Birthday Tribute to Robert Maxwell**
Winfield O. Salter	101	**Editorial: Contractual Sharing of Risk — the International Perspective**
ITA Working Group on Contractual Sharing of Risks	103	**ITA Recommendations on Contractual Sharing of Risks**
Jonathan B. O'Brien and Bernhard Maidl	141	**Automatic Collection of Operational Data in Underground Construction**
David B. Sugden and Robert J. Boyd	153	**Development of the Robbins Mobile Miner**
Sven Erik Bergman	159	**New Developments in Drill-and-Blast Methods**
J. F. Bougard	163	**The Mechanical Pre-Cutting Method**
Eric P. Kindwall	169	**Medical Aspects of Compressed Air Tunnelling: Background and Present State of the Art**
Birger Schmidt	175	**Learning from Nuclear Waste Repository Design: the Ground-Control Plan**
S. A. G. Poppen, A. I. Cooley and M. B. Mirza	183	**Exploratory Shaft Design for a High-Level Waste Repository in Salt**
Hou Xueyuan and Su Yu	193	**The Urban Underground Space Environment and Human Performance**
Bhawani Singh, G. C. Nayak, Ram Kumar and Gopal Chandra	201	**Design Criteria for Plain Concrete Lining in Water and Power Tunnels**
	209	**News and Comment**
	215	**Meetings**
	220	**Publications**
	222	**ITA Pages**
	230	**News from Cooperating Organizations**

Number 3

	233	**Cooperating Organizations**
Heinz Duddeck	235	**Editorial: The ITA's Approach to Structural Design of Tunnels — a Report from the Animateur**
ITA Working Group on General Approaches to the Design of Tunnels	237	**Guidelines for the Design of Tunnels**
Fred Groff	251	**New York University Law Library Digs Deep for a Solution to Space Problems**
Kari Saari and Juhani Lillberg	259	**Lapland's Finns to Build an Earth-Sheltered Arctic Centre**

Kazushige Kikutani, Makoto Nishio and Makoto Kanai	263	**A Computer-Aided Tunneling System (CATS) Aids in Planning and Building an Urban Underground Reservoir Project**
Hakan Stille and Anders Fredriksson	277	**Measurements, Calculations and Stability Prognoses at the SFR Undersea Repository for Low- and Medium-Level Nuclear Waste**
Jüri Martna and Lars Hansen	283	**Tunnelling in a Complex Rock Mass: Experience from Vietas, Swedish Lapland**
B. R. Mehta and Dwain Spencer	295	**Siting Compressed-Air Energy Plants**
Cezary Madryas	301	**Methods of Gathering Data for Determining the Cost of Underground Infrastructure Failure**
Bjarni Bjarnason, Bengt Leijon and Ove Stephansson	305	**The Bolmen Project: Rock Stress Measurements Using Hydraulic Fracturing and Overcoring Techniques**
	317	**News and Comment**
	321	**Meetings**
	324	**Publications**
	326	**ITA Pages**
	336	**News from Cooperating Organizations**

Number 4

	339	**Cooperating Organizations**
Gary S. Brierley	341	**Editorial: Tunneling — a Battle Against the Ground**
V. L. Molenaar	345	**Editorial: A New ITA Working Group Seeks to Define the State-of-the-Art in Immersed and Floating Tunnels**
A. Glerum	347	**Immersed Tunnels: Why, When and Where**
V. L. Molenaar	353	**Applications of Immersion Technologies in Underwater Construction**
J. K. in 't Veld, T. W. T. Knook and J. Werner	359	**Effects of the Environment on Immersed Tunnelling Projects**
Ch. J. Vos	363	**Developments and Quality Safeguards in Immersed Tunnel Technique**
S. B. de Vries	369	**Ships and Tunnels: Particular Loads**
H. van Tongeren and J. Y. Tonnisen	375	**Research on the Structural Behavior of Concrete in Tunnel Structures**
M. Irshad and L. H. Heflin	385	**Soft-Ground NATM Tunnel Designs for the Washington, D.C. Metro**
L. Bartoš and B. Šťastný	393	**Environmental Protection Measures During Construction of the Prague Subway by Drill-and-Blast Tunnelling**
Super Collider Site Evaluation Committee	399	**Siting the Superconducting Super Collider**
Shi Woong Lee and Jang Yeul Shon	409	**The Thermal Environment in an Earth-Sheltered Home in Korea**

417 News and Comment

420 Meetings

423 Publications

424 ITA Pages

431 News from Cooperating Organizations

i Volume 3 Title Section, Contents and Author Index